

State of the Great Lakes

20th Anniversary



A Message from the Governor

by Governor Jennifer M. Granholm



Anniversaries are benchmarks that provide us the opportunity to reflect on accomplishments of the past and to plan our direction for the future. They also serve as moments to celebrate our progress and our perseverance.

The year 2005 was a year of many anniversaries significant to Michigan. The Soo Locks, a fabled international waterway, celebrated 150 years of operation. Imagine the countless ships that have carried cargoes ranging from furs and lumber to iron ore and soybeans to ports around the world.

The Michigan Department of Transportation (MDOT) also celebrated its 100th anniversary in 2005. MDOT has overseen the conversion of original Native American trails to plank roads to freeways that now carry 180,000 vehicles each day; not to mention the construction of Michigan's unrivaled transportation bridge system.

Another anniversary celebrated in 2005 was that of the Office of the Great Lakes which provides Michigan state government offices and the public with a single information center on issues affecting or involving the Great Lakes. Created by Governor James J. Blanchard and the Michigan Legislature in 1985, the office guides the development of government policies, programs, and procedures that protect, enhance, and manage our Great Lakes resources. Given the recent issues of water diversion and aquatic invasive species, this office faces ever-growing responsibility and numerous challenges.

As we move forward together, we are encouraged and inspired by the history and the tenacity of those who have gone before us. They helped shape our future because they were able to adapt to changing times and situations; and they not only prevailed - they flourished.

I know you will enjoy these anniversary stories and more in this edition of the State of the Great Lakes Annual Report. Inside, you'll also find stories about dam removal, water monitoring, and the International Field Year for Lake Erie.

Our state has a rich and diverse history, and the Great Lakes are a vital component of that chronicle. As we reflect on our accomplishments of the past, let us commit ourselves to an even greater future. I invite you to celebrate our Great Lakes!

Sincerely,

A handwritten signature in black ink, appearing to read 'Jennifer M. Granholm', is written over a light blue rectangular background.

Jennifer M. Granholm, Governor



Historic Great Lakes Protections Agreed To

by Ken DeBeaussiaert



In 2004, Governor Jennifer Granholm called for action to protect and preserve our Great Lakes. In a Special Message to the Legislature on Water, Governor Granholm called for a number of actions, including the adoption of a water withdrawal law in Michigan and completion of discussions on Annex 2001, a proposed new agreement with our neighboring Great Lakes states and provinces to protect our waters.

After nearly twenty years of delay, within two years of the Governor's Message to the Legislature, Michigan has made great strides in protecting our waters. 2005 saw overwhelmingly bipartisan legislative action on a water withdrawal law and the signing by Great Lakes governors and premiers of the new Great Lakes St. Lawrence Water Resource Agreement.

Concerned about the threat of diversion of Great Lakes water, Michigan and other Great Lakes states and provinces signed the Great Lakes Charter in 1985. The Charter called for common commitment to managing large water withdrawals and providing information about water use. While Michigan has had water use reporting for some time, the "Great Lakes State" has, until now, failed to keep its Charter commitment to put in place a system to manage large water withdrawals.

The water withdrawal legislation that was ultimately signed into law keeps Michigan's past commitments to the Great Lakes. It is a forward looking, incremental approach that establishes a science based tool to ensure that water withdrawals do not result in adverse impact to our water dependent resources.

Concurrent with the legislative debate on a new water withdrawal law, in December of 2005 the Great Lakes Governors and Premiers completed four years of negotiations on Annex 2001 and signed a new agreement to protect the Great Lakes from threats of diversion. The Agreements signed in December 2005 are built on the commitments made in the Great Lakes Charter of 1985. A good faith state-provincial agreement is coupled with a binding U.S. Compact.

The new Agreements put in place a prohibition on diversion of Great Lakes waters with limited and strictly regulated exceptions that would prevent diversions out of the Great Lakes states and provinces. When complete, this prohibition on diversions will be part of U.S. and Canadian federal law as well as state and provincial law in all jurisdictions.



In addition, each Great Lakes state and province will develop a program to ensure that uses in the basin overall are reasonable and will not result in significant impacts to the waters and water dependent resources of the Basin. And each party will develop conservation programs for water users that will be based on agreed upon goals and objectives.

A Regional Body consisting of the eight Great Lakes states and two Canadian Provinces will convene to review progress on conservation and water withdrawal programs and to study the cumulative impacts of water withdrawals and other reviews based on scientific advances.

Achieving consensus among ten jurisdictions from two nations, representing eight states and two provinces, is quite an achievement. Doing so when there were changes in the Executive Offices of eight of the ten jurisdictions during that time made the end result even more remarkable. The nonpartisan approach in this process reflects the reality that water pays no allegiance to human made boundaries or partisanship.

At the beginning of my involvement in this process, Governor Granholm made it clear that she wanted the strongest possible protection for the Great Lakes and the active involvement of Michigan citizens in the development of the documents. The Agreements signed in December are better, stronger protections for the Great Lakes because thousands of citizens from Michigan and across the Great Lakes took the time to attend meetings, write and email to express their concerns. I appreciate all those Michigan citizens, whether acting on their own or on behalf of industry, agriculture, municipal water systems, local government or environmental organizations, who took the time to be part of this historic process.

Now the real challenge begins, as each of the jurisdictions must move forward and seek legislative and (on the U.S. side) Congressional approval of the Compact without change. The Michigan Legislature will be asked to consider the Compact in 2007.

Water has historically been the foundation of our economic success and quality of life in Michigan and across the Great Lakes Basin. Michigan's water withdrawal law and the proposed Great Lakes Compact represent our commitment to ensure that the Great Lakes will be protected for our enjoyment and use for generations to come.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken DeBeaussaert", with a stylized flourish at the end.

Ken DeBeaussaert, *Director*
Office of the Great Lakes

“The Great Lakes fuel our economy, color our character and literally define the shape of our state. They are our most vital resources, their preservation and protection are too important to approach haphazardly.”

from Governor Granholm's 2004 Special Message to the Legislature on Water

Table of Contents

A Message from the Governor	1
<i>Jennifer M. Granholm, Governor of Michigan</i>	

Historic Great Lakes Protections Agreed to	2
<i>Ken DeBeaussiaert, Director, Office of the Great Lakes</i>	

Protecting The Great Lakes: A Collaborative Effort	6
<i>Steven E. Chester, Director, Michigan Department of Environmental Quality</i>	

Anniversaries

Remembrances	7
<i>James J. Blanchard, former Governor of Michigan</i>	

Michigan's Ports and Waterborne Commerce	9
<i>Larry Karnes, Michigan Department of Transportation</i>	

2005 Soo Locks Sesquicentennial Celebration	12
<i>Congressman Bart Stupak, U.S. House of Representatives</i>	

Great Lakes Fishery Commission Celebrates 50 Years of Sea Lamprey Control and Bi-National Cooperation	14
<i>Dr. William W. Taylor, Michigan State University</i>	

Improving Great Lakes Resources

Michigan Clean Water Corps Engages Citizen Scientists	17
<i>John D. Cherry, Jr., Lt. Governor of Michigan</i>	

Michigan's Stream Team	19
<i>Ralph Reznick, Michigan Department of Environmental Quality</i>	

Michigan Dams: An Update	21
<i>Sharon Hanshue, Michigan Department of Natural Resources</i>	

Contaminated Sediment Remediation within the Ruddiman Creek Watershed	23
<i>Mike Alexander, Michigan Department of Environmental Quality</i>	

The International Field Years on Lake Erie (IFYLE)	26
Dr. Stephen B. Brandt and Margaret B. Lansing, <i>National Oceanic and Atmospheric Administration</i>	
Fish Stocking as a Management Tool in the Great Lakes	28
Gary E. Whelan, <i>Michigan Department of Natural Resources</i>	
Port Huron: Cool City	32
Paul G. Maxwell, <i>Acheson Ventures L.L.C.</i>	
Protect the Forests, Protect the Great Lakes	34
Helen Taylor, <i>The Nature Conservancy</i>	

Protecting the Great Lakes: A Collaborative Effort

by Steven E. Chester



Without question, the Great Lakes are a natural wonder and a blessing to all of us in Michigan. They provide us with myriad recreational opportunities including boating, fishing and swimming. This vast resource is at risk, however, which we cannot continue to overlook, and

Michigan has joined with our Great Lakes neighbors to provide the lakes new protections that will keep them clean and safe for generations to come.

The Regional Collaboration formally began in December 2004 with a group representing Great Lakes governors, federal agency heads, Congressional leaders, Great Lakes mayors, and tribal leaders. This group met in Chicago to sign a Great Lakes Declaration that affirmed the need to work cooperatively toward a goal of protecting and restoring the Great Lakes ecosystem in order to address the challenges we face now, and the emerging challenges we will face down the road.

The group formed strategy teams to target issues such as Coastal Health, Invasive Species, Areas of Concern, and Sustainable Development. In all, participants from across the Great Lakes region assisted the eight strategy teams in developing their contribution to the Great Lakes Strategy that was released in July, 2005. This document has created a framework for the work that must be done in order to restore and protect our Great Lakes.

Michigan was pleased to be a part of the collaboration, but we also recognize that as **the** Great Lakes state, we must lead this effort. In 2005, Michigan passed new laws that will, for the first time, require oceangoing vessels to treat their ballast water prior to entering Michigan ports in order to prevent aquatic invasive species from being introduced into the Great Lakes.

Those who rely on the Great Lakes for economic gain have a responsibility to join our efforts to protect them. The treatment technologies that are available today are environmentally sound, affordable, and effective in preventing the discharge of aquatic invasive species to our waters. Through Michigan's leadership we can set an example for our Great Lakes neighbors to follow, and continue to work together to effectively protect the Great Lakes from invasive species and other ecological threats to the health of these vast freshwater seas.



Remembrances

by James J. Blanchard

Some of my fondest childhood memories are of the beauty and power of the Great Lakes. I remember a dozen summers on Lake Michigan in the Bridgeman dunes. Across the state, we fished for perch in Port Austin. And then later as an 11-year old Boy Scout, I marched high above the Straits of Mackinac with Troop P.R. 3 (Pleasant Ridge). Every Michigander has his or her own stories and memories like these. For so many Michigan citizens, the Great Lakes help define our very existence. We are a maritime state, even though we don't always think of ourselves that way. The Great Lakes loom deep in our very psyches.

Twenty-five years after I first put my toes on that smooth Bridgeman sand, I was elected to the United States Congress. There, I was surprised to learn that a multitude of federal agencies, bureaus, and departments all had some legal or practical jurisdiction in managing and protecting our beautiful Great Lakes. But no one was in charge. The lack of federal coordination of Great Lakes policy concerned me and prompted me to introduce the Great Lakes Protection Act of 1978. It called for a federal agency, housed in the Environmental Protection Agency (EPA), to play a coordinating role in bringing focus and purpose to the crazy quilt pattern of federal regulation and management of the Lakes. While my bill never passed, due to turf wars and lack of federal agency support, the idea did not die. The EPA ended up creating the Great Lakes National Program Office as part of the Clean Water Act, my successors in Congress continued to re-introduce the bill, and I was elected Governor of Michigan.

As Governor, I was in a position to help coordinate Great Lakes policies. Like the U.S. government, Michigan also had many agencies with responsibility for the Lakes. Therefore, one of the first things I did was to create the Office of the Great Lakes, housed in the Department of Natural Resources (DNR). Once established, the Great Lakes office was so well received that the Michigan legislature decided to codify our new agency into law. Flanked by members of the legislature from both political parties, I signed it into law in 1985.

I appointed Tom Martin, today the Executive Vice President of the National Parks Conservation Association, as our first Director of the Office of the Great Lakes. He did a great job. And we did



not stop with the creation of the office. We unleashed a wave of innovation and leadership in dealing with many of the big issues facing the Great Lakes. We reached out to newly-elected and like-minded governors like Dick Celeste of Ohio and Tony Earl of Wisconsin. Working through the Council of Great Lakes Governors, we negotiated the Great Lakes Charter with the seven other Great Lakes states and the Canadian provinces of Ontario and Quebec. This Agreement not only strengthened the legal case against diversion of Great Lakes water, but it set up a system of notification and consultation which required Governors to seek the consent and concurrence of all affected states for major consumptive uses. This concept became federal law in 1986, and Governor Jennifer Granholm continues to work hard to preserve this important arrangement.

As Governor, I was in a position to help coordinate Great Lakes policies.

We took numerous other steps, including negotiating and adopting the first Great Lakes Toxic Substance Control Agreement, a cooperative arrangement among the states and the provinces to go forward and clean up toxic hot spots in the Lakes. We banned oil and gas drilling in the Lakes and created the Great Lakes Protection Fund, the first of its kind. The Fund, an inter-state compact with over a \$100 million of funding, created a permanent endowment dedicated to studying ways to better protect the Lakes and to educate our citizens about the importance of these natural treasures.

On the international front, we hosted the World Conference on Large Lakes, attracting scientists and policy-makers from all over the world to Mackinac Island to discuss the future of fresh water bodies.

Oh, and lest I forget, my Bridgeman dunes memories inspired me to propose a tough, dunes protection measure, which I ultimately signed into law in 1989 standing in the dunes at Grand Haven, overlooking Lake Michigan.

Since I left the Governor's office, the Office of the Great Lakes has continued to thrive. The position of Director of the Office of the Great Lakes was elevated to cabinet status. The leadership of Tracy Mehan during Governor Engler's tenure provided strong leadership in the 1990s. Now Governor Granholm has appointed a dedicated public servant, Ken DeBeaussiaert, to head the Office. Ken had an outstanding record in the Michigan legislature, and during my eight years as Governor, it was a delight to work with him. I have always found him to be knowledgeable, passionate, and committed to the success of our Great Lakes programs.

As we celebrate the 20th Anniversary of the Office of the Great Lakes, we now look ahead. In Washington, Senator Carl Levin and Representative Vernon Ehlers have introduced the Great Lakes Restoration Act in Congress. Its goal is to take common sense steps to a cleaner, more sustainable Great Lakes.

In Michigan, we must, of course, continue our vigilance. We must continue our partnership with the other Great Lakes states and Canada. And we must always remember that we in Michigan have a special duty and responsibility to protect and improve our magnificent water treasure, the crown jewels of our heritage. If we don't do so, no one else will. We are, after all, the Great Lakes state.

James J. Blanchard served as Governor of Michigan from 1983-1991, following four terms in the U.S. Congress (1975-1983). Most recently, he served as U.S. Ambassador to Canada and currently is a partner in the global law firm of DLA Piper Gray Cary US LLP.

Michigan's Ports and Waterborne Commerce

by Larry Karnes



The Michigan Department of Transportation (MDOT) celebrated its 100th anniversary in 2005. Established as the State Highway Department in 1905, it originally focused on the need to supervise road improvements. In 1973, the department was reorganized and gained responsibilities for all modes of transportation, including marine transportation, port development, aeronautics, railroads, buses, and non-motorized transportation. By its centennial year, MDOT had grown into a comprehensive multi-modal agency that is actively involved in all modes of transportation.

For centuries, the Great Lakes have been used as major transportation routes by Native Americans, European explorers, early settlers, and our modern economy. In fact, the availability of efficient marine transportation played a major role in the settlement and economic development of this region of North America. The Great Lakes and St. Lawrence River form a maritime transportation system extending 3,700 kilometers (2,300 miles) from the Gulf of St. Lawrence on the Atlantic Ocean to the western end of Lake Superior. Michigan's 5,150 kilometers (3,200 miles) of shoreline along four of the five Great Lakes contain approximately ninety ports serving commercial and recreational navigation. Nearly forty of these ports accommodate commercial cargo movements and an additional fifty ports primarily serve recreational boating. Other types of commercial activities, including ferry services, marine contractors, shipbuilding, commercial fishing, charter



boat operations, and excursion services, may be located in either cargo or recreational ports. Detroit is Michigan's largest cargo port, handling about one-sixth of the state's total tonnage. Several ports in northern Michigan are privately owned and were built to ship stone produced in nearby quarries. Most of our other ports typically ship or receive a variety of cargoes for local and regional consumption.

Waterborne cargoes handled at Michigan's ports consist primarily of bulk commodities. Stone, sand, iron ore, coal, cement, petroleum, and chemicals account for nearly 98 percent of the 90 million tons of traffic in a typical year. These materials are used in the steel, construction, agriculture, and petroleum industries throughout the Great Lakes region. Many of these commodities, including iron ore, stone, and cement, are mined or produced in northern Michigan or the Upper Peninsula and are shipped via water to the steel and construction industries in the southern Great Lakes. Coal is transported to electric utilities and industries throughout Michigan from both eastern and western U.S. coal producing regions. Petroleum products from refineries in the southern Great Lakes region are shipped to various Great Lakes ports for distribution. Fertilizers for agricultural application are shipped to various ports in the southern Great Lakes.

Since the opening of the St. Lawrence Seaway in 1959, Michigan's total waterborne commerce has ranged from 53 million to 114 million short tons, with an average annual tonnage of 93 million. The large range is due primarily to variations in the general economy and government policies concerning steel production and importation. Most of our waterborne commerce (nearly 99%)

is shipped to or from U.S. and Canadian ports on the Great Lakes and the St. Lawrence River. Less than two percent of the cargo handled at Michigan ports travels directly to or from an overseas port and this consists primarily of steel or forestry products. Michigan's businesses and industries generate large volumes of manufactured



Great Lakes cruise ship, 'Columbus'

products for overseas trade, but nearly all of it is transported overland via truck or rail to Pacific, Atlantic, or Gulf coastal ports for ocean shipping.

Ferry services are provided on 21 routes in Michigan's waterways. The ferries carry automobiles, trucks, passengers, package freight, or a combination of these and may be either publicly or privately owned. They range in scale from the high-volume Mackinac Island services to low volume passenger service to remote islands, and from high-speed cross-Lake Michigan service to truck-only barge service across the Detroit River.

The past several years have seen a resumption of cruise services on the Great Lakes. These services tend to use vessels registered in Europe or the United States and attract both European and domestic passengers. Typical ports of call in Michigan include Detroit and smaller ports with tourist attractions, such as Mackinac Island and Saugatuck.

Throughout our history, marine transportation on the Great Lakes has provided a cost-effective, fuel efficient, and safe transportation system for the movement of goods and people. It remains a major mode of transportation that is critical to Michigan's industries and economic well-being.

Larry Karnes is the Freight Policy Specialist for the Michigan Department of Transportation and has been involved in Great Lakes marine transportation for thirty years. He is active in several national and regional marine transportation organizations and initiatives.

2005 Soo Locks Sesquicentennial Celebration

by Congressman Bart Stupak



he Soo Locks are invaluable to our entire nation.

Each year, more than 80 million tons of freight move through the Soo Locks.

A majority of the raw materials needed by the steel industry rely on the Locks, as do low sulfur coal and grain exports. The materials that are shipped through this area sustain thousands of jobs in mining, construction, steel, energy, farming, and many other industries.

In 2005, the Soo Locks celebrated 150 years of supporting shipping. From the first lock system of the Northwest Fur Company in the late 1700s, which was destroyed during the War of 1812, to the construction of a lock system by civil engineers in the 1850s, to the modern locks that are used today, the Soo Locks have withstood the test of time, meeting the demands of a great nation.

During World War II, the Soo Locks served a vital role in meeting the raw material needs in building the ships, guns, tanks and vehicles used in the War. After the War, the Soo Locks continued to serve as a vital link between industry and the raw materials they needed. In 1965, Congress authorized the construction of the Poe Lock, which is still today the largest lock in the Western Hemisphere, and the busiest lock in the world. The construction of this "super lock" has helped maintain the Soo Locks' importance in our nation's shipping.

On September 2, 2005, I participated in a special ceremony celebrating the 150th Anniversary of the Soo Locks. I spoke at this event, along with several other supporters of the Locks, including Senator Carl Levin, Senator Debbie Stabenow, Governor Jennifer Granholm, Sault Tribe of Chippewa Indians Chairman Aaron Payment, and Sault Ste. Marie Mayor Anthony Bosbous. The event was attended by many supporters of the Soo Locks, from local residents to members of the Canadian Parliament. A time capsule was buried near the Soo Locks Visitors' Center, commemorating this historic day.

I hope to continue the legacy of the Soo Locks by providing the resources to build another super lock that will ensure another successful 150 years of waterborne commerce.



Currently, two-thirds of all freight is restricted to the Poe Lock, which is now over 30 years old. The Poe Lock is the only lock capable of handling the large freighters traveling the Great Lakes. Recognizing the need for a new lock, Congress authorized the construction of a larger replacement lock in 1986. Over the years, I have worked with my fellow members of Congress in securing funding for preconstruction, planning, engineering, and design of the new lock.

I am pleased that the States of Michigan, Illinois and Pennsylvania recognize the economic importance of this additional lock by contributing their non-federal cost shares to the project and will work to encourage the other Great Lakes states to join us in securing the necessary funding to build this new lock. I will also work through the appropriations process to secure the funding necessary to construct the new lock.

I will work to continue the legacy of the Soo Locks to preserve and maintain this valuable shipping corridor for another 150 years.

Congressman Bart Stupak represents Michigan's first congressional district in the U.S. House of Representatives.



Soo Locks

Great Lakes Fishery Commission Celebrates 50 Years of Sea Lamprey Control and Bi-National Cooperation

by Dr. William W. Taylor



reat Lakes fisheries have witnessed few things as devastating as the sea lamprey. These parasitic fish, with their aggressive predaceous behavior, invaded the upper Great Lakes during the early 20th century through the locks and dam systems. Once established, sea lamprey

quickly diminished populations of highly valued Great Lakes fish, principally lake trout. This devastated a lucrative and socially important, commercial, tribal, and sport fishery; extirpated endemic fishes; and resulted in a severely degraded and unmanageable fishery.

Remarkably, this ecological and social catastrophe has been reversed, and waterfront communities have rebounded. In my opinion, this reversal is largely due to the improved Great Lakes' water quality and the resurgence of its fishery resources. Sport fishing has blossomed into a multi-billion dollar industry, annually attracting millions of anglers to the Great Lakes. Commercial and tribal fishing again thrive, contributing to local economies, enhancing social stability, and maintaining the rich fishing traditions of this region.

The Great Lakes Fishery Commission, which celebrated its 50th anniversary in 2005, has played a major role in the recovery of the Great Lakes fishery. The governments of Canada and the United States recognized the need for swift, concerted, and cooperative efforts to stop sea lampreys, and for better understanding of Great Lakes fisheries science and management. They signed, in 1955, the binational treaty: *Convention on Great Lakes Fisheries*. This Convention created the Great Lakes Fishery Commission, whose mandate was to develop and implement a sea lamprey control program, and assist its state, provincial, tribal, and federal partners by providing a forum for coordinated fisheries research and improved inter-jurisdictional management. The commission has been a driving force in enhancing our scientific understanding of these fishery ecosystems. They maintain a respected technical report and special publication series, as well as annually supporting



numerous research projects that advance our abilities to control sea lampreys and to manage fishery resources.

It is noteworthy to mention that Michigan has always been at the forefront of the sea lamprey war. During the 1940s, the state and the U.S. Fish and Wildlife Service cooperatively installed more than 160 crude electrical barriers in Great Lakes streams to reduce sea lamprey spawning in our tributaries. Throughout the years, scientists have and continue to work to find alternative methods that can effectively and efficiently control sea lamprey populations in the Great Lakes basin. For instance, with the low efficiency of the electrical barrier program, fishery scientists started to look at chemical control as an alternative. These efforts lead to the discovery of a lampricide (TFM) in 1957. Little Billie's Creek, a Lake Huron tributary located in Michigan, was the site for the first lampricide field treatment. By 1960, after demonstrating safety and effectiveness, the commission began lampricide treatments in other areas of the Great Lakes.



Sea lamprey larvae

The commission continues to carry out the sea lamprey control program in cooperation with Fisheries and Oceans Canada, the U.S. Fish and Wildlife Service, and the U.S. Geological Survey. The sea lamprey control program has evolved into an integrated pest management program that today includes the use of a multitude of different control options including lampricides, physical and electrical barriers, trapping, and sterile-male-release. This control program has been unequivocally successful in the Great Lakes. Sea lamprey, although now a permanent fixture of the Great Lakes fish community, have had their Great Lakes population lowered by 90% since sea lamprey control began. This suppression has allowed for agencies to establish productive fisheries and rehabilitate to varying degrees, native fishes, thereby contributing to the vast improvements observed in the Great Lakes fishery since the 1955 convention.



Mouth of an adult sea lamprey

While we have significantly lowered the numbers of sea lampreys in the Great Lakes, the battle is not over. We still have significant biological and economic damage to our fishery arising

from the sheer abundance of this pest. We must remain at the cutting edge of science to battle a never tiring, invasive, parasitic fish whose impact, if not intensively managed, would result in the loss of billions of dollars to Michigan's economy alone. The commission is proud of the role it has played, with its partners, in protecting our Great Lakes fishery resources and restoring the fisheries of the Great Lakes.

Dr. William W. Taylor is a professor and chair of the Department of Fisheries and Wildlife at Michigan State University whose research focuses on fisheries ecology, population dynamics, and management. He also serves as the associate director of the Michigan Sea Grant College Program, as an alternate U.S. Commissioner for the Great Lakes Fishery Commission, and member of Michigan's Aquatic Nuisance Species Council.



Great Lakes Fishery Commission

Historical photo of an early electric lamprey barrier

Michigan Clean Water Corps Engages Citizen Scientists

by Lt. Governor John D. Cherry, Jr.



The Michigan Clean Water Corps – or MiCorps – was launched in 2003 by an executive order from Governor Jennifer M. Granholm. Since that time, numerous citizen programs have participated in MiCorps programs to learn how to collect valuable information about the quality of Michigan's lakes and streams. MiCorps was envisioned by the Governor and me to be a statewide initiative to expand the potential of citizen volunteers to collect water quality monitoring information in Michigan. MiCorps assists the Department of Environmental Quality (DEQ) with collecting and sharing water quality data to help us effectively manage and protect our state's vital water resources. MiCorps has made great strides toward meeting this mission.

Prior to the creation of MiCorps, there were numerous volunteer groups that were monitoring Michigan's rivers, streams and lakes, and the DEQ has long recognized their potential to contribute to the state's water quality monitoring program. Building upon existing programs, MiCorps developed a statewide network of volunteer monitoring organizations to collect and share data that would meet the state's quality control standards. MiCorps now provides training and resources to stream and lake volunteers around the state to participate in water quality monitoring activities.

Through its Volunteer Stream Monitoring Program, MiCorps provides grants to local units of government and nonprofit organizations to monitor water quality in wadable streams and rivers. In the two years since it began operations, MiCorps has funded nine programs with over \$86,500, with an additional \$82,500 in contributions from local sources. The grants are targeted toward establishing new monitoring programs or helping small programs expand their coverage. MiCorps has provided training for the 2005 program leaders and the 2006 leaders. The data collected by MiCorps programs are already being used to support DEQ's water resources management programs. The



MiCorps training program focuses on monitoring stream habitat and macroinvertebrate populations for current and aspiring MiCorps volunteer program leaders.

MiCorps also supports the Cooperative Lakes Monitoring Program (CLMP) – a collaborative effort between the DEQ, Michigan Lake and Stream Associations, Inc. (ML&SA), Michigan State University Extension, and MiCorps staff. Nearly 200 lake associations participate in the CLMP to monitor indicators of environmental health in their lakes, including transparency, total phosphorus, chlorophyll a, and dissolved oxygen/temperature profiles. CLMP volunteers also survey their lakes for aquatic plants, and some have contributed experimental programs as well. MiCorps provides \$25,000 in support to the CLMP each year, with additional resources provided by participating lake associations. MiCorps also provides training at ML&SA's annual conference, conducts side-by-side monitoring to ensure data quality, analyzes lake samples, and provides access to the results through annual reports and the MiCorps Data Exchange platform.

The MiCorps website – www.micorps.net – provides a host of information and services for anyone interested in volunteer monitoring in Michigan. This site houses general information for groups who are getting started in volunteer monitoring as well as specific information about the MiCorps program and its services. It includes an online directory with contacts and basic program information for monitoring programs in Michigan, and is also home to the MiCorps Data Exchange platform. Volunteers use the Data Exchange platform to enter their monitoring data and share it with DEQ. The general public can use the platform's searchable database to access volunteer monitoring data. The database is an invaluable tool for interpreting and comparing water quality data for Michigan's lakes and streams.

MiCorps hosted its first annual conference in October 2005. The conference brought together volunteer monitoring program leaders, citizen volunteers, water resource professionals, and others interested in water quality issues to discuss efforts to protect and manage Michigan's lakes and streams, and to learn about the MiCorps program. Nearly 100 people attended the conference, representing more than 60 agencies and local volunteer monitoring programs from across the state of Michigan. MiCorps will host its second annual conference October 2-3, 2006 at the Ralph A. MacMullan Conference Center in Higgins Lake, Michigan.

MiCorps facilitates the exchange of information and ideas on volunteer monitoring through its semiannual newsletter, *The MiCorps Monitor*, and through its online discussion list. Finally, MiCorps has created a membership program for volunteer monitoring organizations that meet criteria for quality assurance and operating procedures. MiCorps member organizations

“The MiCorps website – www.micorps.net – provides a host of information and services for anyone interested in volunteer monitoring in Michigan.”

represent a select group of monitoring programs in Michigan and receive a variety of benefits. Information on how to become a MiCorps member program or on any of MiCorps' many products and services can be obtained from the MiCorps website.

MiCorps is administered by the Great Lakes Commission and the Huron River Watershed Council in collaboration with DEQ staff. For more information about MiCorps, please visit our web site (www.micorps.net) or contact Matt Doss at the Great Lakes Commission, 734-971-9135, mdoss@glc.org, or Ric Lawson at the Huron River Watershed Council, 734-769-5123 ext. 13, rlawson@hrwc.org.

Michigan's Stream Team

by Ralph Reznick



stream channel is defined by its morphology, or its shape. Specifically, the stream channel cross section, slope and pattern or sinuosity all help identify if a stream channel is stable or unstable. Stable stream reaches are defined as neither aggrading (depositing sediment) nor degrading (causing erosion). If enough stable stream reaches could be found over an area of similar geology and rainfall, a regional curve could be created that would serve as a template of how a stable stream reach in that area should look.

Many government agencies in Michigan are involved in the various aspects of stream channel stabilization or restoration. Many of these agencies are using tools of morphological analysis to determine stream stability and natural stream design. For any one of these agencies to attempt to develop stream regional reference curves would have been a formidable task. As the need for such a tool became more apparent, in 2002 staff from a number of state and federal agencies met to discuss ways to share resources and develop common methods for collecting stream data that could be used to create regional reference curves for the entire State of Michigan. This group of agencies now includes the Michigan Department of Environmental Quality (DEQ), the Michigan Department of Natural Resources, Natural Resource Conservation Service, the Michigan Department of Transportation, the Michigan Department of Agriculture, the United States Geological Survey (USGS), the United States Fish and Wildlife Service, the United States Forest Service, Michigan State University, and the Calhoun Conservation District.





Volunteers gather data on a Michigan stream.

This collective group of agency staff is now known as Michigan's Stream Team. In December of 2005 they produced "Protocol for Field Surveys of Stream Morphology at Gaging Stations in Michigan" which identifies stream field measurements that everyone on the team agreed to use to collect stream channel data necessary to create regional reference curves. The Stream Team has developed a plan to partner with the DEQ, USGS and the Calhoun Conservation District to collect the data necessary to assemble statewide curves. That project was scheduled to begin in the spring of 2006 and will end in early 2009. The entire Stream

Team will oversee the project and provide additional resources to the effort. The final product will be available as a resource to anyone working on protecting or restoring Michigan's streams.

As the Stream Team worked to put together their protocol document and regional reference curve study plan, other agency staff began recognizing them as a resource on stream morphology issues. In June of 2005 the Stream Team partnered with the Michigan Chapter of the American Fisheries Society, Michigan Chapter to offer

a week long stream morphology class taught by nationally recognized instructors. The class will be offered again in June of 2006 and in 2007 the team is planning to offer a more advanced course on morphology monitoring techniques. The Stream Team is also planning to develop additional morphology training that will be taught by Stream Team members for groups of specific agency staff on request.



Numerous instruments are used to measure stream health.

The Stream Team recently developed a mission statement that included development of the regional reference curves for the entire state, providing training on morphology and serving as a technical resource to advance stream morphology science to Michigan agencies and interest groups.

The biggest success of the Stream Team is the cooperation among the various federal, state and local agencies involved. Everyone involved participates voluntarily. The Stream Team relies on the expertise and perspective each agency brings to the table to answer often complex stream morphology questions. It is an example of how to effectively use existing resources to accomplish common goals.

Ralph Reznick is a Senior Engineer with the Michigan Department of Environmental Quality in Michigan's Nonpoint Source Program.

Michigan Dams: An Update

by Sharon Hanshue



It's not about the dam – it's about the river!

These words still ring in my ears from one of the workshops I've attended in the last several years, the aim of which is to help those who care about rivers navigate the complex, and often controversial, issue of dam removal.

Michigan, like many states, has hundreds of dams which no longer serve any real purpose, but which continue to inflict profound effects on the ecology of our rivers and streams. In 2000, I had the opportunity to introduce the readers of the State of the Great Lakes annual report to the growing interest and effort to remove, and presumably reverse, the adverse effects of dams. Today, as restoration of the Great Lakes takes on new emphasis and offers new opportunities, it's time to examine what is happening with Michigan's dams.

My records indicate that about 10 dams have been removed in the last 6 years in Michigan, and several more are in the planning stages. These projects range in size, cost, and motive; but they have in common the participation of several collaborators with someone taking a critical leadership role to see a project through sometimes years of planning and fund-raising effort. What usually drives dam owners toward the removal option continues to be the very high cost to maintain or repair a dam that has aged beyond its design life. Unsafe and dilapidated structures pose a risk of failure with a heavy rainfall or quick spring thaw. They may be an "attractive nuisance" to anglers, paddlers or anyone trying to use the river. Virtually no funding is available for dam repair, and since most of the funding available for dam removal is affiliated with grant-making organizations interested in river restoration, establishing a strong link to environmental benefit has been a key in funding dam removal projects.

The decision to remove a dam is seldom without controversy. Though the scientific evidence documenting the adverse environmental effects of dams has been very well established, the economic and environmental impacts and public acceptance of the idea of removing dams has not received the attention it deserves. We have only anecdotal evidence that dam removal can benefit the local economy and has little or no influence on property values. Some evidence has been collected about the response of the fishery or long term water quality changes from dam removal, but not enough. The grass-roots effort to examine the options and impacts of removing one or more dams on the Boardman River is a case in point. Substantial effort is being focused around the fate





Tannery Creek before dam removal



Pine River before dam removal



Tannery Creek after



Pine River after



Muskegon River in Big Rapids before dam removal



Big Rapids after

of those dams that will be resolved only after there is a comprehensive understanding of what the price – and the prize – will likely be economically, socially and environmentally.

Fortunately, several publications have recently been released to help guide people through the dam removal decision making process, including *Exploring Dam Removal: A Decision-Making Guide* (American Rivers and Trout Unlimited, 2002), *Dam Removal: Science and Decision Making* (Heinz Center, 2002) and *Dam Removal: A New Option for a New Century* (Aspen Institute, 2002). In addition, a coalition of dam removal interests has formed the Michigan River Partnership to examine the case of dam removal for Michigan. The Michigan River Partnership is planning to report on the status of Michigan dams and the opportunity offered by selective dam removal in their report, due out by the end of this year.

The Michigan Department of Natural Resources and its sister agency, the Michigan Department of Environmental Quality, have worked together over the years to provide assistance to those with inquiries

about dam removal. We continue to provide technical assistance and guide owners toward viable funding sources. Several pieces of information and a simple Guidance Document for Dam Owners are now available from the web site: www.michigan.gov/dnrdams.

While this is but a brief update, it appears that momentum is building behind dam removal in Michigan. Where dam removals occur, the river appears to recover rapidly. Dam removal has excellent potential to improve fisheries quality and diversity, to enhance in-stream and riparian habitat, and to improve water quality. We look forward to the results of the Michigan River Partnership report examining the dam removal issue for Michigan streams.

Sharon Hansbue is Supervisor of the Habitat Management Unit, Fisheries Division of the Michigan Department of Natural Resources.

Contaminated Sediment Remediation within the Ruddiman Creek Watershed

by *Mike Alexander*



The Michigan Department of Environmental Quality (DEQ) was pleased to sign a partnership agreement with the United States Environmental Protection Agency (EPA) in August 2005 for the remediation of contaminated sediments within the Ruddiman Creek Watershed. This

remediation is the second partnership between the DEQ and the EPA in which federal Great Lakes Legacy Act and State Clean Michigan Initiative funds were used for the remediation. The Great Lakes Legacy Act is a 65 percent federal, 35 percent nonfederal cost share program for the remediation of contaminated sediments in Great Lakes Areas of Concern.

The Ruddiman Creek Watershed is a tributary to Muskegon Lake and is located within the Muskegon Lake Area of Concern. This watershed contains a mix of residential, commercial, and industrial development. Homes, a schoolyard, and a city park all border its stream banks (Figure 1). The Ruddiman Creek Watershed receives storm water inputs from the cities of Muskegon, Muskegon Heights, Norton Shores, and Roosevelt Park. This remedial project is typical of contaminated sediment sites in that historical



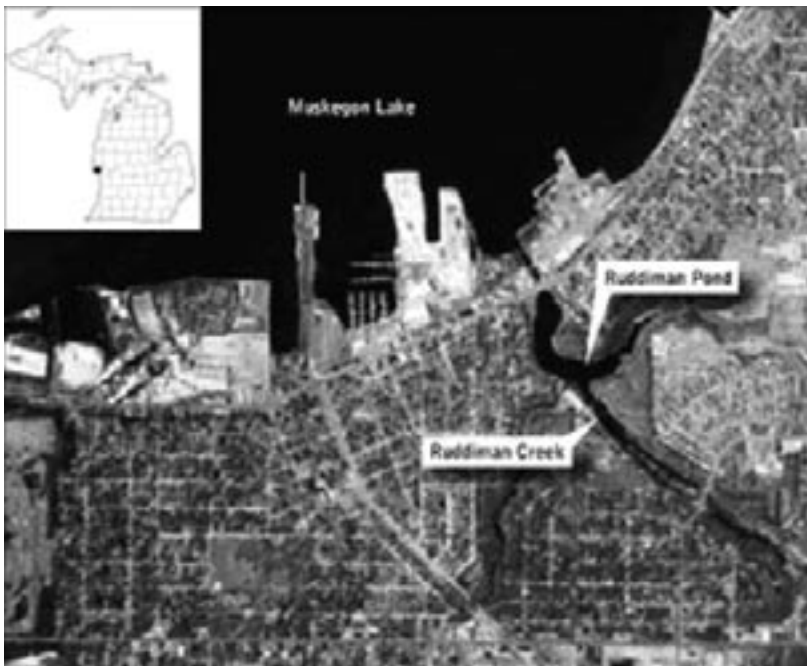


Figure 1. This is an aerial view of the area where contaminated sediment will be removed from Ruddiman Creek and Ruddiman Pond.

wastewater and storm water discharges, improper hazardous waste management practices, and the input of contaminated groundwater have all contributed to the degradation and contamination of this resource. These activities resulted in the release of hazardous substances, including cadmium, chromium, lead, and organic chemicals to the sediments within the Ruddiman Creek Watershed. This remediation will significantly reduce impacts to aquatic life and wildlife from contaminated sediments within the Ruddiman Creek Watershed.

This remedial project will remove approximately 87,000 cubic yards of contaminated sediment from the Ruddiman Creek and Pond at an estimated total project cost of \$13,840,000, with the DEQ share of \$4,844,000. Approximately 20,000

cubic yards of contaminated sediment will be excavated from the main branch of Ruddiman Creek. The sections of the creek targeted for remediation will be sheet piled off and the stream flow pumped around so that the material can be dry excavated (Figure 2). Dry excavation helps to limit the resuspension and downstream movement of the contaminated material. One section of the creek proved to be too difficult to dredge in the dry. The contractor developed a unique plan to use a floating excavator and

small two-ton loader crawler dump trucks that could run on a special high density plastic road that was constructed to float in the floodplain next to the creek (Figures 2 and 3). The floating excavator would sit in the creek and excavate the contaminated sediments to the small dump trucks that would then transport the material along the floating road to the final staging area. This demonstrates that there is no such thing as a typical contaminated sediment remediation. There are always complications that arise during the remediation that require creative thinking.



Figure 2. Dry excavation from the main branch of Ruddiman Creek.

Over all, dredging activities in the pond have progressed with very little difficulty. Approximately 66,000 cubic yards of contaminated sediment are targeted for removal from the Ruddiman Pond. This

material is being dredged in the wet with a clamshell dredge bucket attached to a long reach excavator. The excavator is positioned on a barge and the contaminated sediment is loaded onto small transport barges to be shuttled back to shore.

Currently the dredging activities in Ruddiman Creek and Pond are about 95 percent complete. We hope to have all the dredging and site restoration activities complete by July 2006. Of the contaminated sediment projects our staff has been involved with, this one is by far the best example of the importance and benefits of developing a project team with members from the state and federal government and the local community. One of the key elements of the Great Lakes Legacy Act is local support. The members of the Muskegon Lake Public Advisory Council and the surrounding local communities have provided the much needed support. They have been instrumental in the development of a sound project from the beginning of the remedial investigation through the final design and construction work plan development.

The DEQ is currently working with the EPA and the local community on a remedial investigation at two additional locations within the Muskegon Lake Watershed, Ryerson Creek, and the Division Street outfall. Should remedial actions be necessary at either of these locations, we are confident that we will be able to develop another successful Great Lakes Legacy Act Project. The DEQ is also continuing efforts to develop other remedial projects throughout Michigan Areas of Concern and hope to continue to leverage Great Lakes Legacy Act funds for those projects for as long as our Clean Michigan Initiative funds last. Once those funds are depleted, the DEQ will have to request appropriation from the Michigan Legislature for additional projects.



Figure 3. This machine can drive forward and also float on its pontoons. It has a small bucket for picking up the sediments from the creek and placing it into the swamp crawlers.

Mike Alexander is an aquatic biologist with the Michigan Department of Environmental Quality, Water Bureau, Surface Water Assessment Section.

The International Field Years on Lake Erie (IFYLE)

by Dr. Stephen B. Brandt and Margaret B. Lansing



The National Oceanic and Atmospheric Administration's (NOAA's) Great Lakes Environmental Research Laboratory (GLERL), in collaboration with researchers from the U.S., Canada, and Europe, have initiated what is believed to be the largest, most comprehensive, multidisciplinary research effort ever conducted on Lake Erie: the International Field Years on Lake Erie (IFYLE). Lake Erie faces wide and varied threats to its health and integrity, including harmful algal blooms (HABs) in the west basin, recurring low oxygen episodes ("dead zones") in the central basin, and invasive species as well as extremes in natural phenomena such as high and low water levels, and climate variability. Each of these threats has the potential to disrupt normal food webs and ecosystem processes, and thus, jeopardize Lake Erie's ability to provide healthy fish populations, safe drinking water, and bacteria-free beaches. Since all of these factors are interrelated, the scientific framework for effective management will require ecosystem-level research, particularly relative to biological-physical-chemical interactions on a lake-wide basis and over a range of time and space scales.



During 1972-73, the scientific community of the Great Lakes came together to conduct the first International Field Year for the Great Lakes (IFYGL) on Lake Ontario. It was the largest coordinated, multi-institution aquatic research program ever carried out in the Great Lakes and focused largely on the physics. The work from that program resulted in a wealth of information that still resonates in our understanding and management of the Great Lakes. The International Field Years on Lake Erie (IFYLE) was inspired by the IFYGL but was expanded to include lake chemistry and biology as well as physics and to take advantage of the latest technological, analytical and modeling capabilities.

IFYLE is focused not only on lake-wide understanding, but ultimately on applying the science to develop tools and products useful to lake and resource managers. The project began in May 2005, with a focus on hypoxia and harmful algal blooms. The research explores both why a dead zone forms in Lake Erie and how it influences the ecology and productivity of the system

(including fish). The IFYLE program involves approximately 45 scientists from federal, state and provincial agencies, private institutions, and 17 different universities spread across 7 states and 4 countries. It involves all of the state and provincial fisheries management agencies on Lake Erie and is coordinated, in part, with the help of the Lake Erie lake committee, Lake Erie LAMP and the Lake Erie Millennium Group. The field program involved a number of research vessels, over 2,000 person-days at sea and an array of over a dozen instrumented moorings.

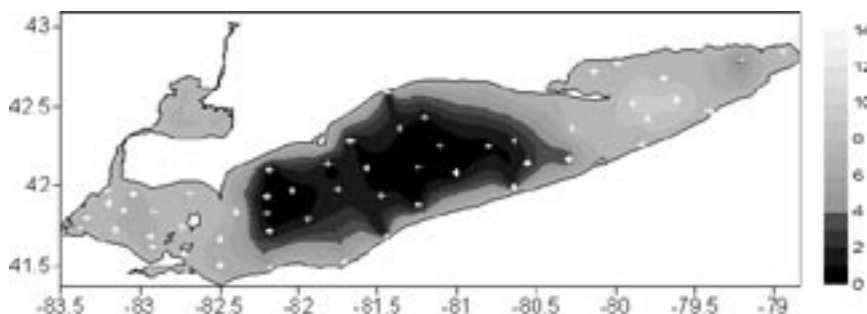
The three primary objectives of the IFYLE program are to:

- 1) Measure the extent of hypoxia across Lake Erie, understand its causes and develop tools that can forecast its timing, duration, and extent;
- 2) Assess the effect of hypoxia on the Lake Erie food web, particularly on the important fishes; and
- 3) Identify factors that control the development of toxin-producing harmful algal blooms in Lake Erie and to develop tools to help predict their occurrences.

Lake Erie “Dead Zone”

Hypoxia is defined as water with low dissolved oxygen levels (<4 mg/l). Hypoxia makes it difficult for oxygen-consuming aquatic organisms, including invertebrates and fish, to survive. IFYLE scientists found an area of ~10,000 km² square miles of hypoxic water in the central basin in September, 2005 (see map). Smaller zones of hypoxia were found in July and August in the western part of the central basin.

Fish and zooplankton were noted to change behavior in the presence of this dead zone. When oxygen was sufficient, fish and zooplankton underwent normal daily migrations, aggregating on the bottom or at the thermocline by day and dispersing throughout the water column by night. During hypoxia, however, fish and zooplankton largely stayed at or above the thermocline both day and night. We are currently evaluating how these changes in distribution may affect fish feeding, growth, survival, and production.



Estimation of dissolved oxygen concentrations (mg/l) in Lake Erie during September 7-11, 2005. IFYLE Sampling stations are denoted in white. Note the large area of bottom hypoxia (i.e. dissolved oxygen levels <4 mg/l) in the central basin, which can be stressful to fish. This figure was provided by Stuart Ludsin (NOAA-GLERL) and Tom Jobengen (CILER, U of Michigan).

Lake Erie Harmful Algal Blooms

Harmful algal blooms (HAB) are becoming commonplace in Western Lake Erie. Algal blooms can produce



Scientists collect data on Lake Erie

toxins. Although 2005 would be considered a low toxicity year by most accounts, several bloom events were observed. We continue to investigate why toxicity and algal blooms vary between years, including identifying the organisms responsible for the toxicity.

Future Plans

IFYLE is a 5-year program. Data collected in 2005 and analyzed in 2006 will be used to guide and focus additional field programs in 2007 and 2008. For more information about IFYLE, visit: <http://www.glerl.noaa.gov/ifyle/>.

Dr. Stephen B. Brandt is the Director of the National Oceanic and Atmospheric Administration's (NOAA) Great Lakes Environmental Research Laboratory in Ann Arbor, Michigan and co-chair of the IJC Council of Great Lakes Research Manager. Margaret B. Lansing is an Ecologist with NOAA-GLERL and Field Program Coordinator for IFYLE.

Fish Stocking as a Management Tool in the Great Lakes

by Gary E. Whelan



he creation of most fisheries agencies during the period from 1860-1880 in the United States can be traced back to the desire for more fish as most of the accessible and sought after fish stocks were rapidly declining due to overharvest, landscape level changes in land use, and pollution. The creation of the Michigan Fish Commission in 1873, the ancestor of the Department of Natural Resources – Fisheries Division, can be directly linked to the demand for more fish in Great Lakes waters and more “desirable food fish” in inland waters. To address this call, the State of Michigan implemented fish stocking as a management tool, and continued the practice for the next 133 years.

From 1873 to 1897, the Michigan Fish Commission stocked millions of lake whitefish and lesser numbers of many other species

into Great Lakes waters to address the rapid declines in commercially important fish. Many of these same Great Lakes species and an amazing array of non-native fish species were also stocked in many inland waters during a period that can be thought of as the “Johnny Fishseed Era.” Fish species from every possible source were being stocked in waters across the state. While fish stocking was the primary management tool of these early fisheries biologists, they fully recognized the importance of habitat degradation and effects of overharvest on the recognized declines in fish populations. Due in large part to their early advocacy on such issues in the Great Lakes, a management strategy focusing the Commission’s work primarily on inland waters was required and implemented in 1897. The resulting lack of attention for the Great Lakes continued through the early 1960s with devastating results.



Sea lamprey cause devastating harm to Great Lakes sport fish such as trout and salmon.

From 1897 through 1964, the Michigan Fish Commission followed by the Michigan Conservation Department did not actively manage Great Lakes waters other than to regulate commercial harvest, though regulation was without a clear understanding of the limits on fish productivity and the potential impacts of overharvest. Essentially, commercial harvest was allowed to continue unencumbered by the regulations in place. However, invasion of the Great Lakes by sea lamprey and alewife eventually combined with overharvest to cause the collapse of commercially important fish populations by the mid to late 1950s. By the early 1960s, efforts to control the invasive sea lamprey were underway.

At the same time, a growing interest in recreational fishing opportunities was becoming apparent to managers who had up until then considered recreational fishing on the Great Lakes inconsequential. The Department of Conservation followed by the Department of Natural Resources made a decision to invest in Great Lakes management and introduced hatchery raised Pacific salmonids to control nuisance alewife populations in hopes of reestablishing displaced native fish populations in Lakes Huron and Michigan. A similar management philosophy led to stocking lake trout in Lake Superior to restore predator populations. Utilizing hatchery reared fish to restore balance in Great Lakes systems was the beginning of an ecosystem-based management philosophy that continues today.

The introduction of hatchery produced predators, significant improvements in water quality due to the Clean Water Act of the 1970s, and increased regulation of commercial harvest changed

Great Lakes fisheries and the future of stocking as a management tool. Today, fish stocking seeks to achieve four key objectives: 1) the restoration of extirpated species; 2) rehabilitation of depressed fish stocks; 3) restoration of ecosystem balance; and, 4) provision of diverse fishing opportunities. Improved production abilities and use of species like coho and Chinook salmon, steelhead, lake trout, walleye and muskellunge, among others, have greatly diversified fishery management strategies and options in the Great Lakes. However, measuring success relative to the objectives being addressed by stocking remains a difficult if not moving target in the dynamic Great Lakes ecosystem. In other words, when are alewife populations sufficiently depressed by stocked fish to allow native fish rehabilitation, yet still provide the diverse fishery desired by anglers? This is a real dilemma for present fisheries managers.

“The use of stocked fish has greatly changed over time and has evolved into an ecosystem management tool.”

Significant reliance on stocking Pacific salmonids and unanticipated improvement in natural recruitment of the species set the stage for the first Great Lakes’ forage base problem by the mid to late 1980s in Lake Michigan. Low forage base numbers were likely the underpinning of the bacterial kidney disease outbreaks and great reductions in Chinook salmon populations in Lake Michigan that caused this economically important fishery to rapidly decline. This forced fisheries managers to closely look at balancing increases in predator biomass with available forage. Development of predictive predator-prey models improved understanding the implications of potential management actions, and led to increased cooperation among all fisheries agencies stocking fish into the Great Lakes basin. In Lake Michigan, widespread reductions of stocking were coordinated amongst the fisheries agencies in an effort to rebuild the Chinook salmon fishery. By the mid 1990s, the Lake Michigan forage base had improved and the salmonid fisheries responded in kind. During the same time, Great Lakes fisheries were expanding in other waters because of continued use of fish stocking. Saginaw Bay and Little Bay de Noc re-established popular walleye fisheries, and Lake Superior had developed a relatively stable self-sustaining lake trout population.

However, by the late 1990s, the combination of harsh environmental conditions, the establishment of new exotic benthic species (gobies, zebra mussels and quagga mussels) that moved energy from the open water to the lake bottom, and high predator numbers likely reduced the survival of prey species in both Lakes Michigan and Huron. Depressed prey numbers have persisted through the present time. Managers had to revisit their understanding of the interactions between forage base and survival of stocked fish. Another key factor was the acknowledgement of the increasing importance of wild recruitment, a positive development that had to be taken into account in all of the predator management models. All of these factors led to more coordinated reductions in stocking of salmon in both lakes.

Chinook salmon fisheries did improve between 2000 and 2002, but unmeasured and increasing numbers of wild-produced Chinook salmon in Lake Huron created a large number of unaccounted predators that directly affected prey numbers.

Today, Lake Michigan prey numbers are low when compared to numbers from the past 35 years. This is largely attributable to the poor recruitment of alewives since 2002 and the large standing stock of predators in the system. Despite these issues, the fishery for Chinook salmon has remained good, but warning signs have emerged. Prey numbers are even lower in Lake Huron. This is because of continuing high survival of wild-produced and uncounted Chinook salmon from Canadian tributary streams and a few very poor years of recruitment for alewives. In 2005, extensive consultation with the angling public generated support for reduced stocking of Chinook salmon in 2006. This year, stockings were reduced from 2.3 to 1.6 million fingerlings in Lake Michigan and from 2.9 to 1.5 million fingerlings in Lake Huron in an attempt to rebuild those fisheries.

There is much good news in this recent tale. First, it is possible to produce large numbers of naturally recruited predators in all of the Great Lakes along with a tantalizing hint of what may be possible in the future, that is having near self-sustaining systems. Second, continuing improvements in water quality on Lake Huron and the use of Pacific salmon to control invasive alewives have lead to increasing natural reproduction of other native fish species such as lake trout, walleye and yellow perch. Finally, fishing has remained good on Lake Michigan and yellow perch recruitment appears to be rebounding as a result of reduced alewife populations there.

The use of stocked fish has greatly changed over time and has evolved into an ecosystem management tool. It is clear that both Lakes Huron and Michigan have productivity limits and that the use of stocked fish must take into consideration the implications of this activity on a range of other species and the ecosystem as a whole. Stocked fish will continue to play a key role in the management of these systems until self-sustaining wild recruitment is established. It is likely that Lakes Huron and Michigan will remain mixed salmonid systems for the foreseeable future and it is hoped that Lake Superior will remain a self-sustaining lake trout fishery. Hatchery produced fish will be key to maintaining such mixed fisheries and ecosystem balance until sustainable wild populations are observed in those lakes where it does not occur today.

Gary Whelan is Fish Production Manager of the Fisheries Division, Michigan Department of Natural Resources.

Port Huron: Cool City

by Paul G. Maxwell



In 1998, some 77 acres of prime waterfront property in the City of Port Huron were littered with mounds of scrap metal and remnants of an industrial era erased by time. And, the site was the end-of-the-line rail yard for CSX and Canadian National spurs as well as a rail ferry dock.

In 2006, those same 77 acres of prime waterfront property in the City of Port Huron are a breathtaking example of how reclaimed land can become the foundation of a project to rejuvenate a forgotten part of town – and, in the end, an entire community.

Eight years ago, James C. Acheson, Port Huron native and philanthropist, had a vision of revitalization for the south side of the city where he had lived as a young boy. Mr. Acheson formed Acheson Ventures and started acquiring land on which to build his dream. Those 77 acres, including a mile of St. Clair River shoreline bordering the property, are now the ever-growing site of Mr. Acheson's vision – Desmond Landing.

For some 150 years, the Desmond Landing site and its mile of shoreline were not accessible to the citizens of Port Huron. However, Mr. Acheson's mission for the property is a blend of recreational, commercial and residential elements – in other words, something for everyone...and all of it accessible to everyone.

Desmond Landing nestles nicely between the mouth of Port Huron's Black River at the north end and the renovated Seaway Terminal at the south end. To the east is the St. Clair River (a major artery of the Great Lakes shipping system). Along the west side of the property is M-25 (a major highway through the center of Port Huron). Also, interstates I-94 and I-69 business loops begin – or end – at Desmond Landing.

One of the favorite areas of Desmond Landing is Vantage Point, where the Black River enters the St. Clair River. A gentle walkway curls along the shoreline. Welcome fishermen cast their lines, hoping to catch a prize walleye or salmon. Giant lake and ocean freighters pass within a few feet of the property. A French fry wagon and old fashioned ice cream truck attract folks of all ages. Just upstream from Vantage Point are the two International Blue Water Bridges, linking the United States and Canada.

About three months ago, Acheson Ventures opened its Great Lakes Maritime Center at Vantage Point. A wooden deck, dotted with shipping company flags, surrounds three sides of the building, facing the St. Clair River. The state-of-the-arts facility (open



daily) includes meeting rooms, wireless internet connections, and the best morning coffee spot in town – Coffee Harbor.

Not far from the Great Lakes Maritime Center is world headquarters for boatnerd.com, an internet website

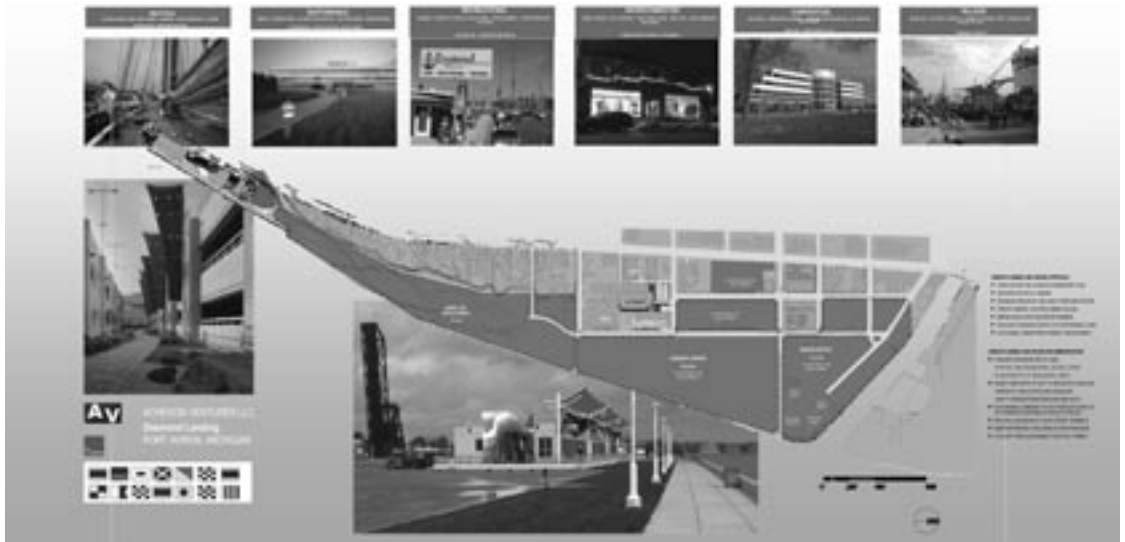
that provides up-to-the-minute ship information for visitors. It uses an automatic identification system to identify freighter position, course, cargo, and other particulars as they pass Vantage Point.

Vantage Point also is home to the revitalized Desmond Marine, which offers free Wi-Fi service, high speed refueling, and year-round storage for pleasure boaters. Colony Marine, a sales representative for Boston Whaler, Sea Ray, Sea Pro, and Meridian boats, opened an office at Desmond Marine last summer.

Desmond Landing's commercial centerpiece, the four-story Harborside Office Center, is company headquarters for natural gas company SEMCO Energy. The other two tenants are Citizens First Bank and Precision Computer Consultants. Eventually, a nearby multi-story parking garage will not only serve the office center's employees, but employees at a new, soon-to-be-built YMCA as well.

Marking the southern-most point of the Desmond Landing development is the refurbished Seaway Terminal, once the Miller Coal Dock, where refueling freighters took on ton after ton of coal. Later, the facility was affectionately known as the Bean Dock because it was a prime import-export site for Great Lakes and foreign ships loading and unloading cargoes such as navy beans, wood pulp, newsprint, jeeps, and car parts – to name a few. Today, terminal activities include non-profit community events, wedding receptions, and visits from Great Lakes cruise ships.

The Seaway Terminal also is home port to Highlander Sea, a tall ship purchased by Mr. Acheson in 2001. The 1924 schooner offers day and weekend sails and public tours, and also participates in tall ship festivals. She truly serves as Port Huron's maritime ambassador to the Great Lakes. The retired U.S. Coast Guard Cutter Bramble, owned by the Port Huron Museum of Arts and History and subsidized by Acheson Ventures also docks at the terminal. That, too, has public tours. Slightly upstream from the Seaway Terminal is home berth for the Gray Fox, a Sea Scout training ship.



Perched at one of the arteries into Desmond Landing is Jim's Information Station. The former gas station, built in 1922, has been refurbished to its 1950s motif. Gasoline memorabilia as well as brochures telling visitors what's going on in Port Huron and at Desmond Landing fill the garage and office areas.

If it were not for Mr. Acheson and his vision, we would not be celebrating the ongoing successes at Desmond Landing. And, during these eight years, we've established solid partnerships with the private sector as well as city, county, and state governments. Port Huron is lucky enough to be part of a dream coming true... while other communities are still dreaming.

Paul G. Maxwell is Director of Public Affairs for Acheson Ventures L.L.C. The growth of Port Huron and its Southside have long-been the focal point of his community involvement.

Protect the Forests, Protect the Great Lakes

by Helen Taylor



he connection between protecting Michigan's forests and protecting the Great Lakes is often under-appreciated.

But the Northern Great Lakes Forest Project, protecting more than 271,000 acres in the Upper Peninsula, is arguably one of the most remarkable Great Lakes protection projects in decades.

On January 6, 2005, I had the honor and pleasure of joining Governor Granholm, Michigan Department of Natural Resources Director Rebecca Humphries, along with leaders from the Michigan Natural Resources Trust Fund and the state's premier philanthropic foundations to announce this historic transaction.

Colloquially known as "the Big U.P. Deal," this multi-year project will protect about 423 square miles—about the size of the surface area of Lake St. Clair—across seven counties. The implications of working at such a large physical scale are huge.

By purchasing more than 23,000 acres outright in the storied Two Hearted River watershed and securing working forest conservation easements over an additional 248,000 acres, the project protects natural resources at a staggering scale. In fact, it's hard to do them justice in a brief summary.

Here are a few highlights, emphasizing water in particular, to show how a forest project at this scale quickly becomes a Great Lakes project.

The landscape covered by the agreement includes:

- 300 inland lakes;
- 516 miles of rivers and streams, including 192 miles of Class A trout streams;
- Thousands of acres of buffer to the Two Hearted River, a state-designated Michigan Natural River, and the Presque Isle River, a federally designated Wild and Scenic River.
- 52,000 acres of wetlands; and
- 31 miles of buffer to Pictured Rocks National Lakeshore

And, of course, much, much more.

Perhaps the single greatest feature of the project is that it connects state and federal protected areas into a contiguous landscape of more than 2 million acres. And all this in the northern reaches of the Great Lakes ecosystem – the headwaters, if you will, meaning the benefits are felt throughout the system.

In order to work on this scale, the project needed to be built on a solid foundation; one that made economic sense to the dozens of communities affected. By keeping the lands open for timber harvesting and outdoor recreation, the project protects an estimated 3,000 jobs tied to the landscape. It also keeps the land in private ownership and on the local tax rolls.

For me, the project also brings hope. While we live, work, and play in one of the country's greatest states, we sometimes forget what global significance surrounds us. The Great Lakes constitute the largest freshwater surface supply on Earth, and our miles of shoreline are second in the U.S. only to Alaska.

Everything we do on and to the land we live on has an impact on its nearby water, and directly and indirectly, on the Great Lakes. Because of where we choose to live, we have a very real responsibility here in Michigan to improve and maintain the health of these world-renowned resources.

The Nature Conservancy is a worldwide organization whose mission is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. The Northern Great Lakes Forest



Project is a perfect example of how the Conservancy works with businesses, communities and government to “save the last great places” for generations to come.

A tremendous group of people worked diligently over the last four years to make this dream a reality—from Governor Engler to Governor Granholm, and from the state’s most generous foundations and private individuals.

We thank them, and salute them, for their support of this historic project, and hope you will do as well.

Helen Taylor is State Director of The Nature Conservancy in Michigan. In March, 2003, Helen was appointed by Governor Granholm to serve on the Michigan Land Use Leadership Council. In addition, Helen serves as a member of the Agriculture Preservation Fund Board.



A hiker pauses at McMahon Lake.

Michael D.L. Jordan, courtesy of the C.S. Mott Foundation

Acknowledgements

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Layout and Graphic Design

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As a "Michigan Great Printer," Print and Mail Consulting Services is significantly committed to environmental stewardship by employing environmentally sound practices in the lithography industry.



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<http://www.michigan.gov/deq>

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